

REMARKS

The application includes claims 1-9 and 11-23 prior to entering this amendment.

The examiner rejected claims 2 and 12 under 35 U.S.C. § 112, second paragraph. The examiner rejected claims 3-6 and 13-14 as being dependent on claims 2 and 12, respectively.

The examiner rejected claims 1, 7, 15, and 16 under 35 U.S.C. § 103(a) over Yang *et al.* (U.S. Patent Application Publication No. 2002/0168034) in view of the Applicants Own Admitted Prior Art (AOAPA) and Katoh *et al.* (U.S. Patent No. 6,526,107).

The examiner rejected claim 2 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Katoh, and McCarty, Jr. *et al.* (U.S. Patent 6,704,353).

The examiner rejected claims 3, 5, 6, 8, and 17 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Katoh, and Serra *et al.* (U.S. Patent 5,536,902).

The examiner rejected claims 9 and 18 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Katoh, Serra, and Hennenhoefler *et al.* (U.S. Patent Application Publication No. 2002/0083474).

The examiner rejected claim 4 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Katoh, Serra, and Gunzelmann *et al.* (U.S. Patent Application Publication No. 2001/0028673).

The examiner rejected claims 11, 19, 21, and 22 under 35 U.S.C. § 103(a) over Yang in view of AOAPA and Hennenhoefler.

The examiner rejected claim 12 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Hennenhoefler, and McCarty.

The examiner rejected claims 13 and 14 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Hennenhoefler, McCarty, and Serra.

The examiner rejected claims 20 and 23 under 35 U.S.C. § 103(a) over Yang in view of AOAPA, Hennenhoefler, and Serra.

The applicants amend claims 1, 3-9, 11, and 13-23 and cancel claims 2 and 12 without prejudice.

The application remains with claims 1, 3-9, 11, and 13-23 after entering this amendment.

The applicants do not add new matter and respectfully request reconsideration.

Claim Rejections Under § 112

The examiner rejected claims 2 and 12 under 35 U.S.C. § 112, second paragraph, because the recitation “the performing amplitude normalization” lacks antecedent basis. The examiner rejected claims 3-6 and 13-14 as being dependent on rejected claims 2 and 12, respectively.

The applicants cancel claims 2 and 12 to obviate the examiner’s rejection. The applicants amend claims 3 and 13 to depend from claims 1 and 11, respectively.

Claim Rejections Under § 103

The examiner rejected claims 1-9 and 11-23 under 35 U.S.C. § 103(a) over Yang in view of various combinations of AOAPA, Katoh, McCarty, Serra, Hennenhoefer, and Gunzelmann.

The applicants traverse the rejections for the reasons that follow.

Claim 1 recites *removing direct current (DC) offsets from said I and Q baseband signals*. Claims 7, 11, 15, 19, and 21 include similar language. In the previously filed amendment, the applicants argued that they “made no general admission that a person of skill in the art would require DC offset cancellation in any circumstance much less in the method and circuit recited in the claims.”¹ The examiner replied to this argument by pointing out that the specification states that “...those in the art will understand, one method of offset cancellation involves exploiting the idle time intervals in digital wireless standards to carry out offset cancellation.”² The examiner took that statement as an admission that “a person of skill in the art would indeed require DC offset cancellation and that the AOAPA even discloses of a known method for doing so.” The examiner maintained that part of the rejection.

The applicants reiterate that they made no general admission that a person of skill in the art would require DC offset cancellation in any circumstance much less in the method and circuit recited in the claims. Rather, the applicants described in Figure 4 a block diagram of the packet detection system of the present invention. The paragraph cited by the examiner to support the allegation of admission indicates in pertinent part: “...As those in the art will understand, one method of offset cancellation involves exploiting the idle time intervals in digital wireless standards to carry out offset cancellations.”³ The applicants interpret that passage as indicating

¹ Amendment, filed 12/17/2007.

² Office action dated 4/1/2008, citing the applicants’ specification, page 7, paragraph [00018] which is paragraph [0034] of publication number 2005/0058227.

³ U.S. publication number 2005/0058227, paragraph [0034].

that one manner of offset cancellation involves “exploiting the time intervals in digital wireless standards.” This paragraph is far from indicating that “a person of skill in the art would indeed require DC offset cancellation” as the examiner alleged.

The paragraph further indicates that “those skilled in the art will appreciate, DC offsets arise from local oscillator (LO) leakage or feedthrough.” Put differently, a person of skill in the art may recognize that one possible origin of DC offsets is local oscillator leakage. Again, the paragraph provides no admission that “a person of skill in the art would indeed require DC offset cancellation...”⁴ as alleged by the examiner. Moreover, the paragraph continues with a description of an embodiment of a packet detection system and not a description of a circuit that the applicants identify as known to a person of skill in the art. More precisely, the specification states the system of Figure 4 “is a block diagram of the packet detection system of the present invention....the system comprises I and Q direct current (DC) offset modules 30, 32 and acquisition block 34. Each of the I and Q signals must have DC offsets removed to some degree since DC offsets may skew the performance of the acquisition block.”⁵ The DC offsets that are described by the specification as needing to be removed are of the packet detection system of the present invention. The specification continues its description by stating: “If directly amplified, the offset voltage can saturate the circuit, prohibiting the amplification of the desired signal. Therefore some means of offset cancellation is required. DC estimation modules 36, 38 estimate the required offset which is applied to the incoming I and Q signals.”⁶ The specification refers to the circuit that is the subject of the present invention and not of a circuit that is conventional or otherwise known to a person of skill in the art. When the specification refers to offset cancellation, it refers to the particular circuit that is the subject of the applicants’ application. To interpret otherwise is to misrepresent the specification.

Claim 1 further recites *mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation*. Claim 7 recites *a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized QPSK signal constellation*. Claim 11 recites *mapping the modulated I and Q baseband signals to a unit circle on a QPSK constellation*. Claim 16 recites *a M-ary phase shift keying (PSK) mapper to map the corrected I and Q baseband signals to a quantized PSK signal constellation*. Claim 19 recites *a M-ary phase shift keying*

⁴ Office action dated 4/1/2008, page 2.

⁵ U.S. publication number 2005/0058227, paragraphs [0033] and [0034].

(PSK) mapper to map the corrected *I* and *Q* baseband signals to a quantized QPSK signal constellation. Claim 22 recites similar language. The examiner acknowledged that Yang failed to disclose the recited language but argued that Katoh's BPSK de-mapping inherently disclosed the recited *mapping...to a unit circle on a PSK constellation*.⁷

The examiner reasoned that "BPSK de-mapping is interpreted as claimed mapping because BPSK de-mapping inherently implies mapping to a constellation unit circle...to accurately determine what bit was transmitted, i.e., in order to accurately demodulate the signal."⁸ But Katoh's transmitting side mapping is based on an 8BPSK modulation where the system can "transmit a 3-bit digital signal (a, b, c) in the form of with one symbol and there are 8 combinations of bits forming one symbol; (0,0,0), (0,0,1), to (1,1,1). These 3-bit digital signals are converted to signal point positioning 0 to 7 on the I-Q vector plane on the transmitting side in FIG. 5(a) and this conversion is called '8PSK mapping'."⁹ And Katoh's receiving side demaps the BPSK modulated frame synchronization pattern. To disclose the recited mapping, however, would apparently require Katoh to BPSK demap Yang's *I_n* and *Q_n* signals output from the A/D 304. But the claim requires mapping *the modulated I and Q baseband signals*, not just mapping the *I* and *Q* baseband signals (prior to modulation) resulting from down-converting the RF signal. Since the examiner identifies the modulated *I* and *Q* baseband signals as those output from the acquisition and demodulator 310, it follows that it is the signals output from Yang's acquisition and demodulator 310 that must be mapped to disclose the claims.

Claim 1 recites *comparing the mapped I and Q baseband signals to a reference signal via a complex correlator*. Claim 7 recites *a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference*. Claim 11 recites *comparing the amplitude normalized I and Q baseband signals to a reference signal via a complex correlator, detecting a peak of the complex correlator output, and if the peak is above a predefined threshold, indicating that a data packet has been received*. Claim 19 recites *a complex correlator to receive input from the M-ary PSK mapper and to compare the mapped I and Q baseband signals to a reference*.

⁶ U.S. publication number 2005/0058227, paragraph [0034].

⁷ Office action dated 4/1/2007, page 5.

⁸ Office action dated 4/1/2007, page 5.

⁹ Katoh, column 5, lines 57-63.

The examiner alleged that Yang disclosed the recited comparing when it disclosed that its “burst detector 320 detects whether the output S_n of the moving window accumulator 318 has reached a peak and exceeds a predetermined threshold, signifying that a predetermined pattern of symbols has been detected in the a packet preamble.”¹⁰ First, the burst detector 320 does not compare the *mapped I and Q baseband signals* as required by the claims since the examiner acknowledged that Yang does not disclose the recited mapping the *modulated I and Q baseband signals to a unit circle on a QPSK constellation*. The applicants do not believe Katoh discloses the recited mapping as they explain above.

But even if it did, the combination of Katoh and Yang would fail to disclose the recited language. This is because Yang’s burst detector 320 detects whether the output S_n of the moving window accumulator 318 has reached a peak and exceeds a predetermined threshold.¹¹ The output S_n represents the “sums of the output d_n of the pattern detection logic 316 over N samples, where the number N is the number of samples represented by the packet preamble.”¹² Thus, Yang determines whether the sums of the output d_n of the pattern detection logic 316 over N samples exceeds a predetermined threshold. Yang’s burst detector 320 does not detect whether the output of the acquisition and demodulator 310 exceeds a predetermined threshold, as it must to disclose the claims. This is because the examiner had previously identified the demodulator 310 as disclosing the recited modulating the I and Q baseband signals. The claims require that the comparing be of *mapped I and Q baseband signals*, the mapped I and Q baseband signals being produced from *modulating the I and Q baseband signals*. And even if the logic held up, the claims require that the comparing be done by *a complex correlator*. The applicants do not believe that Yang’s peak detector 320 discloses the recited complex correlator.

¹⁰ Yang, paragraph [0080].

¹¹ Yang, paragraph [0080].

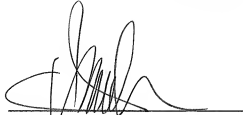
¹² Yang, paragraph [0078].

Conclusion

In view of the foregoing, the applicants respectfully submit that claims 1, 3-9, 11, and 13-23 are allowable. The applicants encourage the examiner to telephone if a conference would expedite prosecution and allowance of this application.

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